DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
OF THE ARMY (CIVIL WORKS)

COMPLETE STATEMENT
OF
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BEFORE THE
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

MANAGEMENT AND DISPOSAL OF LOW ACTIVITY RADIOACTIVE WASTE
ROOM 406, DIRKSEN SENATE OFFICE BUILDING
0930 HOURS, JULY 25, 2000

Thank you for the opportunity to explain the U.S. Army Corps of Engineers policies and practices with respect to the management and disposal of low activity radioactive materials under the Formerly Utilized Sites Remedial Action Program (FUSRAP). Accompanying me today are: Ms Julie Peterson, a Corps health physicist, Ms Noelle Simpson, a Corps Assistant Counsel for Environmental Restoration, Regulation and Compliance, and Stephen Keefer and George Sunderland of the Army Audit Agency.

The Department of Energy (DOE) initiated FUSRAP in the 1970's to address radiological contamination remaining at sites contaminated as a result of the Nation's early atomic energy development program. Most of these sites were cleaned up according to standards in effect when these activities were completed and released for unrestricted use. DOE reviewed several hundred possible sites. A total of 46 sites, five sites of which Congress later directed DOE to remediate, have been included in the program.

In October 1997, responsibility for completing cleanup at 21 sites where DOE had not yet completed remedial activities was transferred to the Corps in the Fiscal Year 1998 Energy and Water Development Appropriations Act (P. L. 105-62). The Corps actions in cleaning up FUSRAP sites since October 1997 may be summarized as follows:

- seamless transition from DOE: no slippage in cleanup activities as a result of the transfer
- established partnerships with local communities, state and federal regulators
- executed a memorandum of understanding with the Department of Energy
- awarded a nationwide disposal contract at rates of 50-60% or more less than what they were at the time of transfer
- execution approaching or exceeding work scheduled during FY 98 and FY 99

- removed and safely disposed of 324,000 cubic yards of material
- completion of remedial activities at three of the 21 sites remaining to be completed
- Records of Decision at 6 sites

The Corps has achieved this while putting worker safety, and the protection of public health and the environment first.

Regulatory Framework of FUSRAP Remediation

The Corps performs response actions at FUSRAP sites in accordance with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), as authorized in Section 611 of the Energy and Water Development Appropriations Acts for 2000. This statutory regime regulates the entire FUSRAP cleanup process, with external oversight from EPA and the states. This regulatory regime also sets criteria to guide the development of the final cleanup plan for the site. CERCLA and the NCP also set a framework for involving regulators and the public in the cleanup selection process.

For federal agencies conducting response actions, CERCLA waives federal, state and local procedural requirements of a permit for work performed entirely on-site. Although an agency is not required to adhere to the administrative aspects of permit requirements, the agency must meet the substantive requirements of an otherwise applicable permit. This permit waiver, however, does not extend to activities performed off-site, such as transportation and disposal.

The Corps follows applicable transportation requirements, such as the Department of Transportation (DOT) regulations under the Hazardous Material Transportation Act. These regulations specify marking, labeling, placarding, packaging, and shipping paper requirements for certain types of hazardous materials. Most FUSRAP materials do not meet the DOT regulatory definition of radioactive waste because the materials do not exceed 2,000 picoCuries/gram[1]. FUSRAP material that is not covered by these transportation regulations is still tracked for accountability through a chain-of-custody form.

The NCP also mandates that all parties conducting remediation pursuant to CERCLA authority must comply with the off-site rule. Under this rule, the Corps notifies the EPA regional offsite coordinator where the disposal facility is located before materials are shipped to the disposal site. EPA determines whether the facility proposed for the disposal is in compliance with all permits or licenses, or has pending enforcement actions that indicate that the facility may present a risk of release to the environment. EPA must determine that the facility is acceptable under the off-site rule before any materials are shipped.

[1] A picocurie is the smallest measure for the intensity of radioactivity contained in a sample of radioactive material. It represents one trillionth of a curie, or two disintegrations per minute.

If more than one disposal facility is identified as a potential option for the waste material, a competitive process will be utilized to locate the facility which best meets the project needs. The criteria used in this competitive process may include technical factors such as past performance, waste management plan, technical expertise, management experience, and disposal and transportation costs.

Federal regulations to ensure the health and safety of workers at disposal sites are found either in worker protection standards promulgated by the NRC, for NRC licensed facilities, or by the Occupational Safety and Health Administration (OSHA) for hazardous waste disposal facilities permitted under RCRA. Both the NRC and OSHA standards provide comparable protection for workers responsible for the disposal of radioactive materials.

The disposal of all FUSRAP material off-site is regulated depending upon the materials and risks involved. The Corps reviews historical radiological survey and sampling data and also conducts its own characterization work to determine which hazardous materials are present, and in what quantities and concentrations. The Corps then uses this information to determine the regulatory status of the material before disposing of the material in accordance with applicable laws and regulations, as well as the acceptance criteria of the receiving facilities. It is the responsibility of the operator of the disposal site to obtain all necessary state permits and licenses to dispose of the material. However, the Corps independently verifies that the disposal facility is licensed or permitted to accept the materials for disposal.

Regulatory Status of FUSRAP Materials

While FUSRAP materials which are regulated under the Atomic Energy Act (AEA) must be sent to NRC or Agreement State licensed disposal sites, some low activity FUSRAP materials may be disposed of at Resource Conservation and Recovery Act (RCRA) permitted facilities which allow disposal of such materials. NRC has stated that it does not have jurisdiction over residual materials, i.e., waste or tailings from the processing of ore for source material content, if two conditions are met: 1) the residual materials were generated prior to 1978, when the Uranium Mill Tailing Radiation Control Act (UMTRCA) was passed; and 2) the residual materials resulted from a processing operation that was not licensed in 1978 or thereafter. Included in such materials are residual contamination from materials generated by uranium processing facilities used during the Manhattan project. Those facilities were operated and later decontaminated and decommissioned by the Atomic Energy Commission and one of its successor agencies, the Department of Energy. DOE facilities that discontinued uranium operations dedicated to national security purposes were targeted for decontamination and cleanup. Those cleanups were, and are, conducted in accordance with FUSRAP. After 1978, active commercial processing of uranium from ore for use in the commercial nuclear industry was subject to NRC licensing as required by UMTRCA.

Congress passed UMTRCA in 1978 with the intent of expanding the jurisdictional reach of the Atomic Energy Act to specifically described uranium processing sites and

materials that Congress found to represent a public health threat. UMTRCA established a bifurcated approach to addressing uranium mill tailings and milling waste. The Act is divided into two titles: Title I created a remediation program for specific sites designated in the Act where uranium ore processing had occurred prior to 1978 primarily for the supply of the nuclear programs of the United States; Title II established a regulatory program to address tailings and waste from active, licensed milling operations. Title II of UMTRCA gave the NRC jurisdiction over the tailings or waste produced from active ore processing activities licensed at that time or in the future. The legislative history of Title II of UMTRCA repeatedly focuses on the application of the requirements to existing or new licenses. The Congress was aware that this new statutory authority did not apply to all radioactive materials of a similar nature yet declined to expand the law to cover other types of sites, such as FUSRAP sites, containing similar materials.

The historic ore processing residuals at FUSRAP sites constitute a minute fraction of all the process wastes from mining, oil and gas production, water treatment during mineral processing, and other activities that contain the same naturally occurring radionuclides as these FUSRAP wastes and that are disposed at sites not regulated under the AEA. Most of these other materials are not disposed of at facilities licensed by the NRC or an Agreement State. All FUSRAP materials are disposed of at a facility licensed or permitted for disposal of radioactive materials, much of it at NRC facilities, and a smaller percentage at state-permitted disposal facilities with specified limits for low activity radioactive materials.

The state regulators for the RCRA facilities that are receiving the low activity FUSRAP wastes have specific provisions in their permits allowing for the disposal of these wastes at the facilities. The facilities are designed to manage these wastes, as well as RCRA hazardous waste, and in some cases wastes regulated under other statutes, such as the federal Toxic Substances Control Act (TSCA), which regulates disposal of PCBs, asbestos, and other toxic chemical substances. These facilities all have designs and operating plans that include liners, leachate collection systems, surface and groundwater monitoring, worker protection standards, perimeter security, emergency response plans, eventual caps upon unit closure, and long term maintenance and land use restrictions. In short, they are engineered, subject to state regulation, to safely dispose of materials such as FUSRAP wastes. Permits for these facilities were issued only after notice and public comment, including public participation on the permit provisions dealing with radioactive materials. They are located in geographic areas considered appropriate for disposal of hazardous wastes, due in part to low precipitation and very deep subsurface intervals to groundwater.

The Corps will continue to dispose of FUSRAP materials with higher activity levels in NRC or agreement state licensed disposal sites, since they are the only facilities which can accept higher activity materials, whether the materials themselves are NRC licensed or not. The Corps regards both NRC licensed and RCRA permitted disposal facilities as providing protection to workers and the communities around them from exposure to the hazardous substances, including radionuclides, that they are permitted or licensed to manage for disposal.

Corps Disposal Policy

The Corps policy for the disposal of FUSRAP radioactively contaminated materials requires that waste material first be characterized via an evaluation of historical data and the use of appropriate analytical testing. Based on the characterization information, the Corps will identify potential disposal facilities for that waste material. Only facilities licensed by the Nuclear Regulatory Commission or an Agreement State, or facilities permitted by a Federal or state regulator to accept radioactive materials in accordance with applicable laws and regulations, will be considered candidates.

Prior to shipment of FUSRAP material to a disposal facility, the Corps policy requires that both the facility and its regulator be provided complete and accurate characterization information and that each agrees to its disposal at that facility. Moreover, the policy requires the written concurrence of the state and/or federal regulatory agency indicating that the proposed disposal is consistent with applicable regulations and the license or permit.

Linde Site Building 30 Demolition and Disposal

The Linde Site is located on East Park Drive in the Town of Tonawanda, New York. Between 1942 and 1946, Linde Air Products, a subsidiary of Union Carbide Industrial Gases, was contracted by the Manhattan Engineer District to extract uranium from uranium ore received at the site. Linde Building 30 was one of five on-site buildings in which uranium processing occurred. Uranium extraction activities were discontinued in 1946 and the buildings were decontaminated and decommissioned from 1949 through 1953 to standards in effect at that time.

DOE designated the Linde Site as eligible for cleanup under FUSRAP in 1980. DOE released an Engineering Evaluation/Cost Analysis (EE/CA) pertaining to the demolition and disposal of Building 30 in November 1996 for public comment. The Corps issued an Action Memorandum and Responsiveness Summary for the Linde Site Building 30 Demolition and Disposal pursuant to this EE/CA in February, 1998.

The Corps of Engineers awarded a work order to Radian International, LLC of Bethesda, Maryland in May 1998 to demolish and dispose of Building 30. Work included abandonment of utilities, removal of waste and debris stored in the building, asbestos removal, structural demolition, and off-site disposal of demolition debris. Prior to the demolition, all the waste and debris stored in the building were removed and disposed of at Envirocare in Clive, Utah, and the building interior, including surfaces of structural members, was cleaned of contaminated dust and loose materials. Those materials were also removed from the building and disposed of at Envirocare.

Building 30 had twice previously been surveyed with instrumentation to detect radiation. The first was during 1949-52, when the building was decontaminated to the standards in effect at the time, and again, by DOE, in the 1980-81 timeframe. Most

recently, the Corps of Engineers conducted its own comprehensive radiation survey using modern detection equipment, followed by core sampling, prior to demolition and shipping. The twenty-six samples taken by Corps contractor verified the location and radiation levels of "hot-spots" identified by non-destructive electronic surveying for radiation contaminants. These samples measured in the picocurie level. The final sampling led to conservative estimates of the radiation level averages for the building structure.

Demolition of Building 30 was completed in September, 1998. The demolition debris was segregated and Radian competitively solicited bids for transportation and disposal of the material.

As a result of this competitive process the radioactively contaminated material was disposed as follows:

- 1,282.6 tons of soil, steel and miscellaneous waste, including all the material stored in Building 30, was shipped to Envirocare in Clive, Utah for disposal; and
- 2,164.42 tons of wood, masonry and interior asbestos were shipped to Safety-Kleen in Buttonwillow, California.

Different disposal facilities were selected based on the characterization, including level of activity, of the materials as compared to the permit or license limitations of the facilities, as well as debris size, transportation efficiency, cost, regulator agreement to allow receipt of the material and other factors. Disposal was completed February 10, 1999.

Use of Safety-Kleen Facility near Buttonwillow, California

Safety-Kleen's permit from the State of California for operation of the facility near Buttonwillow allows the disposal of radioactive materials with an activity level less than 2,000 picoCuries/gram that are not NRC regulated source material. The permit contains no restrictions limiting Safety-Kleen to accepting only naturally occurring radioactive material ("NORM"). The Linde materials shipped to Safety-Kleen comprised construction debris, mostly broken concrete and wood, with residual amounts of radioactivity averaging 335 picoCuries/gram, well below the limit in Safety-Kleen's permit. Furthermore, the Linde materials are not NRC regulated source material, but rather radioactive residuals from the processing of ores at a facility that was not licensed by the NRC in 1978 when UMTRCA was passed. Prior to shipment of the Linde construction debris to California, as requested by the Corps, Safety-Kleen telephonically informed both the California State Department of Health Services and Department of Toxic Substances Control of its plans to dispose of FUSRAP wastes prior to shipment from the Linde site. At that time, neither Department indicated that they had any concerns regarding the suitability of Safety-Kleen for the disposal of these wastes. Safety-Kleen followed the telephonic notification with a written notice to both Departments.

Subsequently, more than a month after the last shipment was received, the California Department of Health Services (DHS) wrote Safety-Kleen to express its concerns that Safety-Kleen was not properly licensed to accept radioactive materials. However, based on a review of the disposal by a team of radiation experts assembled by the DHS, the California Environmental Protection Agency and Health and Human Services Agency indicate, by letter dated August 25, 1999, to California State Assemblyman, Dean Florez, that there is "no reason to expect long-term problems at this facility." The state agencies also acknowledge that the facility's design of "two three-foot thick impermeable clay liners, three heavy gauge synthetic liners, and two leachate collection systems ... is more than is required by State and federal environmental laws." Because the materials involved are primarily solid concrete and wood debris which were previously cleaned and decontaminated, the Corps believes that potential for migration of entrained radioactive residues through the liners and into the environment is negligible. In addition, DTSC, the state agency responsible for implementing the California Resource Conservation and Recovery Act (RCRA) program, "has not found any violations – of the Resource Conservation and Recovery Act (RCRA) hazardous waste facility permit, which DTSC issued – by the company in accepting these shipments."

The California Department of Health Services (DHS) has advised the Corps that it is continuing to pursue its investigations of the FUSRAP disposal at the Safety-Kleen facility. Although the state's RCRA agency issued a permit to Safety Kleen, it appears that the California Environmental Protection Agency may not have fully coordinated its permitting action with the California Department of Health Services.

Audit by the Army Audit Agency

In response to questions about the disposal of Linde Building 30 materials, I have asked the Army Audit Agency (AAA) to investigate this action. The tentative conclusions reached by AAA are that the Corps was in full compliance with all applicable laws and regulations and acted responsibly in protecting overall human health, safety and the environment. I will provide the final report to the Committee as soon as it is completed.